



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/328,645	06/09/1999	HENRY CHUNG	30-4718(4780	7088

7590 07/03/2002

RICHARD S. ROBERTS
P. O. BOX 484
PRINCETON, NJ 08542

EXAMINER

VU, HUNG K

ART UNIT	PAPER NUMBER
----------	--------------

2811

DATE MAILED: 07/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/328,645

Applicant(s)

CHUNG, HENRY

Examiner

Hung K. Vu

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 and 8-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Invention of Embodiments 3, Figures 2E and 5A-5F, in Paper No. 13 is acknowledged. The traversal is on the ground(s) that the Examiner does not provide a showing of distinctness. This is not found persuasive because it is well settled that related inventions are restrictable if it is shown that these inventions distinct. It was clearly established that Group I and II inventions and Embodiments 1 to 4 are in fact distinct

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1-4 and 8-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 13.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

4. Claim 5 is objected to because of the following informalities:

In claim 5, line 14, "a gaps" should be changed to "said gap" for clarity. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, lines 9 and 13, the phrases “additional layer of the first dielectric layer” are unclear as to whether the additional layer is the first dielectric layer or the additional layer comprises the same material as the first dielectric layer.

In claim 5, lines 11-12, the phrase “a gap in at least one the recesses of the first dielectric layer at a side wall of a metal contact” is unclear as to whether the metal contacts are formed on the first dielectric layer can have a gap that forms at a side wall of a metal contact.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 5 and 6, in compliance with 35 USC 112, second paragraph, are rejected under 35 U.S.C. 102(b) as being anticipated by Havemann (PN 5,565,384). Note Figures 2 and 4 of Havemann.

Havemann discloses an integrated circuit structure which comprises

- a substrate;
- a layer of a first dielectric material (10) on the substrate;
- a plurality of spaced apart metal contacts (18) on the layer of the first dielectric material;
- a space between adjacent metal contacts, each space being filled with a second dielectric material (22);
- a recess in the filled spaces of the second dielectric material extending from a level at a top of the metal contacts a part of the distance toward the substrate;
- an additional layer (24) of the first dielectric material on at least some of the metal contacts and in the recesses on the filled spaces of the second dielectric material such that there is optionally a gap in at least one the recesses of the additional layer at a side wall of a metal contact;
- at least one via (30) extending through the additional layer of the first dielectric material extending to the top of at least one of the metal contacts and optionally to the gap; wherein the

Art Unit: 2811

first dielectric material and the second dielectric material have substantially different etch resistance properties.

With regard to claim 6, Havemann discloses the via is filled with at least one metal.

7. Claims 5-7, in compliance with 35 USC 112, second paragraph, are rejected under 35 U.S.C. 102(e) as being anticipated by Grill et al. (PN 6,265,779). Note Figures 4, 6, and 8 of Grill et al..

Grill et al. discloses an integrated circuit structure which comprises

- a substrate (20);

- a layer of a first dielectric material (274) on the substrate;

- a plurality of spaced apart metal contacts (70) on the layer of the first dielectric material;

- a space between adjacent metal contacts, each space being filled with a second dielectric material (250);

- a recess in the filled spaces of the second dielectric material extending from a level at a top of the metal contacts a part of the distance toward the substrate;

- an additional layer (280,270) of the first dielectric material on at least some of the metal contacts and in the recesses on the filled spaces of the second dielectric material;

- at least one via (30) extending through the additional layer of the first dielectric material extending to the top of at least one of the metal contacts; wherein the first dielectric material and the second dielectric material have substantially different etch resistance properties.

Art Unit: 2811

With regard to claim 6, Grill et al. discloses the via is filled with at least one metal.

With regard to claim 7, Grill et al. discloses the first dielectric material is organic (amorphous silicon-containing carbon-based materials) and the second dielectric material is inorganic.

Conclusion

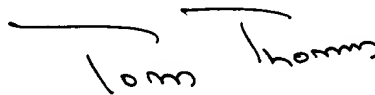
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (703) 308-4079. The examiner can normally be reached on Mon-Thurs 7:00-5:30, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

June 24, 2002


TOM THOMAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800